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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,909	11/18/2003	Hideo Takagi	032108	4001

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EXAMINER

DANG, PHUC T

ART UNIT PAPER NUMBER

2818

DATE MAILED: 03/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/714,909	Applicant(s) TAKAGI ET AL.	
	Examiner PHUC T. DANG	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on election filed on January 21, 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 21 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>111803</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

1. Applicant's election filed on January 21, 2005 has been acknowledged.
In election, Applicants elected Group I (claims 1-20) for examining at the present time.
2. Claims 21-22 are non-elected claims and still pending in the application.

Oath/Declaration

3. The oath/declaration filed on November 18, 2003 is acceptable.

Priority

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

5. The office acknowledges receipt of the following items from the applicant:
Information Disclosure Statement (IDS) filed on November 18, 2003.

Specification

6. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-20 are rejected under 35 U.S.C. 102 (e) as being anticipated by Diodato et al., hereinafter "Diodato" (U.S. Patent No. 6,794,694).

Regarding claims 1 and 13, Diodato discloses a method of a method of fabricating semiconductor memory device comprising the steps:

forming charge storage film (42, Fig. 1) for storing electric charge; and
erasing electric charge stored the charge storage film (42, Fig. 8) by subjecting said charge storage film to hydrogen annealing after the formation thereof [col. 2, lines 65-col. 3, line 1 and col. 6, lines 27-41].

Regarding claims 2 and 14, Diodato discloses the plasma treatment is carried out over a duration of time of 40 seconds to 90 second and annealing is carried out over a duration of time of 30 minutes to 90 minutes [col. 6, lines 46-54].

Regarding claims 3, 8, 15 and 18, Diodato discloses the formation of the charge storage film, a step forming a contact hole (61, Fig. 6) through which a wiring connection to be

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established, and then subjecting said film to the hydrogen plasma treatment through the contact hole [col. 5, lines 19-55].

Regarding claims 4 and 9, Diodato discloses the plasma treatment is carried out before, during, or after a barrier metal (64, Fig. 7) is formed along the inner wall of the contact hole (61, Fig. 7) [col. 5, lines 33-37].

Regarding claims 5 and 10, Diodato discloses the barrier metal has a thickness of 5 nm or less [col. 2, line 65-col. 3, line 5].

Regarding claims 6, 11, 16 and 19, Diodato discloses the plasma annealing treatment is carried out at 350°C to 450°C [col. 7, lines 52-55].

Regarding claims 7, 12, 17 and 10, Diodato discloses the charge storage film is any one of a nitride film, a double-layered film comprising an oxide film and a nitride film, and a three-layered film comprising an oxide film, a nitride film and an oxide film [col. 3, lines 1-5].

Conclusion

8. Applicants are advised to cancel the non-elected claims of Group II (claims 21-22) in response to the next Office action if the application is considered to be allowed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is (571) 272-1776. The examiner can normally be reached on 8:00 am-5:00 pm.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization

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where this application or proceeding is assigned are 703-872-9306 for regular communications and After Final communications.

11. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Phuc T. Dang

PD

A handwritten signature in cursive script, appearing to read 'Phuc T. Dang', written in black ink.

Primary Examiner

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